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(54) MANUFACTURE OF PARTLY TRANSPARENT SECRET-PROTECTIVE ELEMENT

(57)Abstract:

PROBLEM TO BE SOLVED: To manufacture a low-cost partly transparent surface pattern having a surface element for diffracting, reflecting or diffusing to scatter an incident light and capable of being visually recognized.

SOLUTION: A base foil having a support foil 1, a transparent coating film layer 1 and an intermediate layer 5 stuck with both the foil 2 and the layer 1 is used. The exposed surface to the film layer is entirely coated with a reflecting layer 3 before or after an uneven structure having a microscopically finely diffraction effect is provided at the layer 1. Then, an etchant is printed on the layer 2 by a predetermined print image, and the reflecting layer is removed. Then, it is covered with a transparent protective layer 19, and an uneven structure 6 and a stuck part 22 having no reflecting layer are embedded in plastic laminates 1, 19. When the base foil is mounted at a credit card, the pattern on the card can be observed via the layer 19, the part 22 and the layer 1, and the pattern of the structure 6 can be observed by the diffraction effect.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]In the method of manufacturing a transparent security element selectively, and also details, this invention. It is related with the method of manufacturing a transparent security element selectively which embedded the face pattern which consists of optical marking which has the separated reflecting layer, and which acts in diffracted-light study, and a transparent holdfast, and which can be recognized visually in the plastic lamination. That is, this invention relates to the method of manufacturing the face pattern which consists of a field which has the reflexivity grids structure (rugged structure) which makes it diffracting the light of a statement for claims 1 and 2 to set and to write, and a transparent partial side and which was metalized selectively.

[0002]The face pattern in which this kind was metalized selectively has the two-dimensional picture etc. which comprised rugged structure provided with the characteristic of making light like a hologram diffracting, and a surface element which has a diffraction grating, and it is used in order to raise the forgery prevention of a bill, a document, and the product of all the kinds.

[0003]

[Description of the Prior Art]The face pattern metalized selectively is known from Switzerland Patent Gazette CH-PS670904. The rugged structure which makes light diffract is embedded in the multilayer document. The rugged structure which diffracts light by two protective layers is enclosed, and the interface of two protective layers is formed of the interlayer who acts optically in respect of a predetermined portion in that case. The partial side is separated by the field without an interlayer and two protective layers are mutually coupled directly in the field. In a bridge part, the bond part between two protective layers has good adhesion force especially. [0004]When a protective layer is transparent, the partial side which is not covered by the interlayer on whom a document acts optically is transparent. At the time of manufacture, it is printed in the layer of the field which does not form the interlayer on whom the plastic foil which has the stamped rugged structure which makes light diffract acts optically in which washout is [however] possible. The interlayer who acts optically is applied to the field where plastic foil was printed, and the field which is not printed. The layer in which washout is possible, and the interlayer who has adhered on it are removed by the cleaning process. The 2nd protective layer is applied after desiccation. Therefore, this protective layer covers only the rugged structure which makes light diffract. Only in the predetermined partial side which has an interlayer who acts optically, the typical color by diffraction of white light with which it shines is acquired by rugged structure, and the diffraction effect is not observed in the rugged structure of a field without the interlayer who acts optically on the other hand.

[0005]From British application GB-A2136352, the rugged structure diffracted in plastic foil is stamped, and covering by the interlayer who reflects the whole surface is known. Next, the field set beforehand that light is made to diffract is covered with a protective mask, and he removes the interlayer who has exposed using an etching agent, and is trying to obtain the face pattern selectively metalized by it.

[0006]From United States patent gazette US-PS3647508, it is applied with printing technique on the vapor-deposited metal layer, and the process of the etching agent which does not act on a plastic plate is known.

[0007]The material for almost all plastics and reflecting layers which can be used for forming in European patent application EP-201323A2 the plastic lamination which has diffracted-light study rugged structure is listed.

[0008]

[Problem(s) to be Solved by the Invention]The technical problem of this invention is providing the easy and cheap method of manufacturing the face pattern in which the kind quoted at the beginning was metalized

selectively.

[0009]

[Means for Solving the Problem]According to this invention, an above-mentioned technical problem. In a method of manufacturing a transparent security element selectively which embedded a face pattern which consists of optical marking which has the separated reflecting layer (3), and which acts in diffracted-light study, and a transparent holdfast (22), and which can be recognized visually in a plastic lamination (1, 19), Fine rugged structure (6) is microscopically molded by base foil (4), and wholly coating of the coating layer (1) of base foil (4) made unevenness in this way is carried out by a reflecting layer (3), An etching agent (8) is applied on a reflecting layer (3) by printing technique by a predetermined printing picture which consists of a partial side (7), It is removed by etching agent (8) in a place whose reflecting layer (3) is a partial side (7), The surface of a coating layer (1) is exposed, a field of a coating layer (1) which is a partial side (7), and a reflecting layer (3) which remained is covered with at least one transparent protective layer (19), and a plastic lamination (1, 19) is formed, In that case, when [of a partial side (7)] a coating layer (1) couples directly with a protective layer (19) by the way, it is solved by a method of manufacturing a transparent security element selectively, wherein a transparent holdfast (22) is formed.

[0010]In a method of manufacturing a transparent security element selectively which embedded a face pattern which consists of optical marking which has the reflecting layer (3) which separated an aforementioned problem, and which acts in diffracted-light study, and a transparent holdfast (22), and which can be recognized visually in a plastic lamination (1, 19), Fine rugged structure (6) is microscopically stamped on base foil (4) covered with a reflecting layer (3), An etching agent (8) is applied on a reflecting layer (3) by printing technique by a predetermined printing picture which consists of a partial side (7), It is removed by etching agent (8) in a place whose reflecting layer (3) is a partial side (7), The surface of a coating layer (1) is exposed, a field of a coating layer (1) which is a partial side (7), and a reflecting layer (3) which remained is covered with at least one transparent protective layer (19), and a plastic lamination (1, 19) is formed, In that case, when [of a partial side (7)] a coating layer (1) couples directly with a protective layer (19) by the way, it is solved also by a method of manufacturing a transparent security element selectively, wherein a transparent holdfast (22) is formed.

[0011]At least two rugged structure from which a lattice parameter differs in a coating layer in this invention is *****s. Alignment of the printing picture which consists of a partial side is carried out to a face pattern which consists of optical marking, and it is formed.

[0012]In order to protect a reflecting layer from corrosion, a holdfast which did not dissociate but was connected with the surroundings of a face pattern is formed.

[0013]Preferably, an adhesion medium layer is applied between a coating layer of base foil, and support foil, transparent foil is used for support foil, and optical marking is recognized visually through a protective layer and support foil.

[0014]Material with which a refractive index is [0.1] different from material of a coating layer at the maximum is used to a protective layer, and the desirable material same as a protective layer as a coating layer is applied.

[0015]Aluminum is used as a reflecting layer and, specifically, an alkaline etching agent is used.

[0016]

[Embodiment of the Invention]The embodiment of the invention is illustrated and this invention is explained in detail below based on this embodiment.

[0017]In drawing 1, the numerals 1 show the support foil coated with the transparent coating layer (coating material layers, such as lacquer) and the coating layer 1 with transparent 2. The surface which the coating layer 1 exposed is covered with the reflecting layer 3. The support foil 2 coated in this way is marketed as the band-like base foil 4 wound around the roll of various width which does not have or have the reflecting layer 3.

[0018]Various modifications are known about the layer system of the base foil 4 for manufacturing the security element which has an optical diffraction element. The base foil 4 is provided with the following.

For example, support foil 2 formed from the polyester band of 10 to 50-micrometer thickness.

The coating layer 1 preferably applied 10 micrometers using acryl lacquer by 1 to 3-micrometer thickness from 1.

The interlayer 5 of 0.1 to 0.4-micrometer thickness stationed between the support foil 2 and the coating layer 1. A mechanical strength required for the manufacturing step after it is given to the coating layer 1 by the support foil 2. In the case of a certification card or a valuable card, the support foil 2 is used as a direct card base. In that case, the thickness of the support foil 2 is in 0.1 mm to 1 mm, or the range beyond it.

[0019]When the interlayer 5 consists of a wax-like substance, the interlayer 5 functions as a detached core. If

heat is used, the support foil 2 will separate easily from the coating layer 1. When trying to make it join together so that after a manufacturing process may use support foil 2 as a transparent protect member to it and it cannot separate from the coating layer 1, the interlayer 5 is formed from the paint formed, for example on a polyurethane basis, and what is called an adhesion medium agent (= primer (primer)). You pretreat the support foil 2 by corona discharge, and the coating layer 1 can make it make it adhere good on support foil 2 the very thing. In that case, the interlayer 5 is unnecessary.

[0020]The reflecting layer 3 consists of a metallic material or a dielectric material. Aluminum is used for the reflecting layer 3 especially preferably. It is because aluminum has very big optical reflexivity and makes a cheap manufacturing process possible. When taking out the optical color effect especially, metal, such as other metallic materials or dielectric material indicated to EP-201323A2 [quoted at the beginning] especially chromium, iron, gold, copper, magnesium, nickel, and silver, can also be used.

[0021]The base foil 4 currently manufactured beforehand is preferred, and thickness has already had the 1 to 50-nm reflecting layer 3 according to material, respectively. It is ***** in the coating layer 1 by the unillustrated matrix with which the rugged structure (relief structure) 6 which has the fine diffraction effect microscopically from the surface which this very thin reflecting layer exposed has a negative of the rugged structure 6. The rugged structure 6 is the surface element or hologram from which a line interval, an azimuth (direction), and uneven shape, i.e., a lattice parameter, differ and which comprised a pattern with the diffraction effect which has fine rugged structure microscopically. The optical property of the rugged structure 6 is determined by the lattice parameter. In the base foil 4, the uneven pattern which consists of the rugged structure 6 is formed on the coating layer 1 after templating. This uneven pattern generates the picture of the two-dimensional side which comprises a surface element which has various lattice parameters in the case of diffraction.

[0022]Some surface elements of an uneven pattern have a smooth structure or a mat structure of scattering light, like a completely flat mirror as the extreme rugged structure 6. An uneven pattern comprises graphics surface element or pixel (= pixel), therefore is divided into the surface element of character top a large number. An uneven pattern has many uneven patterns in the direction which crosses regular arrangement, for example, a belt, on the base foil 4, and prescribed interval partition ***** of this is carried out in the direction to which a belt extends. The difference of elevation of the rugged structure 6 is small with regards to the diffraction characteristic defined beforehand compared with the thickness of the coating layer 1. For example, when the coating thickness of the coating layer 1 is 1000 nm, the greatest difference of elevation is about 400 nm. Preferably an uneven pattern on the base foil 4 as indicated to EP-392085A1 simultaneously with that of *****. In order to carry out alignment correctly by a continuous treatment process, the mark usually used in printing technique and the same alignment auxiliary mark can be stamped on a longitudinal direction together at a periodic interval. The base foil 4 which has the rugged structure 6 molded and built is rolled again, and is kept temporarily.

[0023]The state where the reflecting layer 3 which is in the place of the predetermined partial side 7 as a next stage of the continuing processing is removed is illustrated by drawing 2. Therefore, the partial side 7 is transparent in spite of the rugged structure 6, it does not generate or the diffraction effect turns into the weak diffraction effect intrinsically from the diffraction effect outside the partial side 7 in this part.

[0024]The etching agent 8 is applied to the place of the partial side 7 on the reflecting layer 7 by screen-stencil, using the rotary printers 9 and 10 which have the printing cylinder 9 and the spreading roller 10 using either of the publicly known printing methods, or a cheap ink-jet printer. The printing picture formed of the partial side 7 from a geometric surface element, a graphic symbol, an alphabet sign, or a pattern image occurs. The partial side 7 of a printing picture can be chosen regardless of the surface element of the uneven pattern which consists of the rugged structure 6 in itself. A printing picture and an uneven pattern become together and form the picture or face pattern of a security element which can be recognized visually. Preferably, a printing picture and the center of an uneven pattern are in agreement, and have the same alignment distance. If the matrix of the negative of the same expensive rugged structure 6 is used compared with the version of printing and various printing pictures are combined with the same uneven pattern, the security element which has a face pattern in which various visual recognition is possible can be built cheaply. The area ratio of the partial side 7 in the field of an uneven pattern is determined by desired transparency.

[0025]The etching agent of acid and alkali is suitable for aluminum, and the result which can be satisfied by NaOH or KHO in that case is obtained.

[0026]In the example of a graphic display, the printing cylinder 9 has the printing plate formed as mesa structure

corresponding to a printing picture which upheaved. Like the ink in books printing, in these printers 9 and 10, the etching agent 8 becomes the layer 12 and is applied on the mesa structure 11 from the roller 10. If the printing cylinder 9 rotates, it will be transferred on the reflecting layer 3 in the place whose layer 12 of the etching agent 8 is the partial side 7. this etching agent 8 is indicated to US-PS3647508 described at the beginning, when required -- as -- concentration of the farina thru/or a paste, the silicic acid by which hydrophobing was carried out, other fusing agents, etc. -- it is adjusted by the consistency which was suitable for printing using the agent. Whenever the printing cylinder 9 rotates, it rolls on the base foil 4, and alignment of the mesa structure 11 of a printing pattern is carried out to the rugged structure 6 on which the etching agent 8 is stamped, and it is applied by a continuous printing method.

[0027]The etching agent 8 on the partial side 7 reacts to the material of the reflecting layer 3, and dissolves a reflecting layer chemically. Since the reflecting layer 3 has thickness usually smaller than 50 nm, the dissolution of a reflector is performed very quickly, and before an etching agent permeates across the boundary of the partial side 7 also in it, it is performed. Since the remnants of an etching process are removed by the continuing cleaning process, in the partial side 7, the reflecting layer 3 is lost thoroughly. The reflecting layer 3 forms the island which has a clear outline arranged on stamp base foil in general high accuracy (about 0.05 mm) in printing technique out of the partial side 7 of a printing picture.

[0028]It is not important whether although the partial side 7 is removed by etching, the base foil 4 is already stamped. It is because it will fill up with it when the slight difference of elevation of 1 micrometer or less within the rugged structure 6 applies the layer 12 by the etching agent 8. Therefore, the reflecting layer 3 is removed certainly also a concavo-convex pars basilaris ossis occipitalis. Printing of a up to [the portion on which the base foil 4 is not stamped for the rugged structure 6 printed by the etching agent 8 in part on the left-hand side of drawing 2 on the right-hand side of the drawing on the other hand] is illustrated.

[0029]Drawing 3 shows the base foil 4 of drawing 2 after an etching process and a cleaning process. A slot is formed in the place of the etching trailer side 7, and the surface of the coating layer 1 is exposed to the reflecting layer 3 shown with a slash from the slot.

[0030]In other methods, the etching agent 8 is printed the same with being known from US-PS3647508 by the base foil 4 which has not been stamped yet probably (drawing 2). Alignment is carried out to the partial side 7 removed by etching following a cleaning process, and the rugged structure 6 is stamped. In that case, the rugged structure 6 is stamped on both fields which has the partial side 7 and the reflecting layer 3.

[0031]In other methods, templating by the matrix which has a negative of the rugged structure 6 is performed, while applying the coating layer 1 on the support foil 2. It is copied to the still soft coating layer 1 which hardening of the liquefied paint for the coating layers 1 is performed using ultraviolet rays, and a matrix is hardening in that case. Next, it is formed on the coating layer 1 which the reflecting layer 3 hardened, and base foil is rolled round. Processing after it is performed by printing and washing of the etching agent 8 as mentioned above.

[0032]Structure which is illustrated selectively [drawing 4] on one surface of the base foil 4 after processing is acquired. The fields 13 and 14 have the rugged structure 6 from which the lattice parameter of uneven shape (profile), a lattice spacing, and an azimuth differs, respectively. The reflecting layer 3 is set in the partial sides 7 and 7, and is removed, and the surface of the coating layer 1 is exposed. The surface of the reflecting layer 3 is being underlined with the slash from the reasons of a graphic display. The smooth field portion which is not stamped [which was covered by the reflecting layer 3] acts as a mirror.

[0033]In the device which enforces this method, the base foil 4 is moved to the right from the left in drawing 5. In the printer 15, the etching agent 8 (drawing 2) is printed by the printing cylinder 9 by the base foil 4 at the reflecting layer 3 side. Then, the base foil 4 is attained to the optimal time of after washing station 16 for an etching process, and the excessive etching agent 8 is flushed from base foil with the water sprayed there, for example with the material in which the reflecting layer 3 was dissolved. Since the moisture which remains on the surface of the base foil 4 evaporates in the dryer 17, it dries thoroughly, and the base foil 4 is attained to the coater 18, and is extensively applied to the side in which the protective layer 19 1 to 10 micrometers thick has the reflecting layer 3 into which the base foil 4 was etched there using the drum. Material of the protective layer 19 can be made into paints, such as paints, such as lacquer which can be hardened by ultraviolet rays thru/or a varnish, or lacquer dried with a solvent like before thru/or a varnish. Therefore, the structure of the device 20 is related to the material of the protective layer 19. The heat energy which the device 20 has [heat energy] a black light which makes hardening start in the case of the former, or accelerates evaporation of a solvent in the case of the latter is generated.

[0034]It is also possible to roll round the etched base foil 4 instead of the processing section shown in drawing 5, after coming out of the dryer 17. The base foil 4 etched at the next time is supplied to the coater 18 from a roll, and a protective layer is applied and dried.

[0035]The whole surface of the surface which the reflecting layer 3 outside the partial side 7 (drawing 3) which remains, and the coating layer 1 of the base foil 4 (drawing 4) within the partial side 7 exposed in drawing 6 is coated by the protective layer 19, and, thereby, the reflecting layer 3 on the rugged structure 6 and other structures 21 is protected. The reflecting layer 3 which has the rugged structure 6 or the structure 21 by spreading of the protective layer 19 is embedded in the plastic lamination 1 and 19, and a security element is manufactured by this plastic lamination. Generally the adhesion force between the coating layer 1 in the partial side 7 and the protective layer 19 is quite larger than the adhesion force between the coating layer 1 or the protective layer 19, and the reflecting layer 3. Therefore, a protective layer cannot be removed, without destroying the rugged structure 6 in an adjoining field. The interface formed of the coating layer 1 and the protective layer 19 is called the holdfast (adhesion bridge) 22 so that it may be in agreement with Switzerland Patent Gazette CH-PS670904 [already quoted at the beginning].

[0036]It has the desirable refractive index as the coating layer 1 with the same protective layer 19. It is because the smooth surface which the rugged structure 6 which is not covered by the reflecting layer 3 or the coating layer 1 has exposed disappears after spreading of the protective layer 19. The interface which acts optically is not formed between the coating layer 1 and the protective layer 19. Therefore, in the place of the holdfast 22, light is not diffracted or reflected in the direction of an observer. In the drawing, the transient part between the coating layer 1 and the protective layer 19 is illustrated by the dashed line from the reasons of a graphic display.

[0037]A transparent material which can be used for a paint has only a difference of about 0.4 refractive index at the maximum. When this difference is larger than 0.1, reflection occurs in the place of the holdfast 22 of the interface between the coating layer 1 and the protective layer 19, and it can carry out visible [of that reflection] at a certain look angle, without spoiling transparency. When this difference is smaller than 0.1, it is reflected, or since the luminous intensity diffracted is very small, reflection thru/or the diffraction effect cannot be perceived by the naked eye.

[0038]The protective layer 19 consists of the conventional adhesives to dry in the 1st example, and it is formed so that the base foil 4 may be combined with the surface of a subject. The thickness of a glue line follows the surface structure of the field which should be pasted up. In the 2nd example, the paint for protection of non adhesion nature, for example, the same paint as the coating layer 1, is applied first, and the glue line as outermost layer is applied to here where it consists of the 2nd coater 18 (drawing 5) and 2nd dryer 20 (drawing 5) next using the 2nd device that is not illustrated. Adhesives mean publicly known hot glue or a cold indirect adhesive.

[0039]When the support foil 2 is used as a base for a valuable card or credit cards, the transparent paint for protection of non adhesion nature is used for the interlayer 5 by an adhesion medium agent and the protective layer 19. If the uneven pattern of the rugged structure 6 has the protective layer 19 and the transparent card base in this 3rd example, it can see through a protective layer and a card base, and will become the advantage which was excellent when it was graphics composition. In the case of a valuable card or a credit card, processing of printing like before, cutting, packing, etc. is performed if needed.

[0040]When many security elements arrange and are arranged on the base foil 4 suitable for the adhesion which formed the protective layer 19, the base foil 4 is first cut and rolled round by the longitudinal direction according to the width of a security element. The security element of these large number arranged almost simultaneously is provided in each roll.

[0041]The security element formed in accordance with the above-mentioned method pastes up on the subject 23 in drawing 7. On the left-hand side of the drawing, the protective layer 19 is covered by the glue line 24, and protective layer 19 the very thing is formed from the charge of a binder in the right-hand side of a drawing. When the interlayer 5 is formed as a detached core after a security element adheres on the subject 23, the support foil 2 can be lengthened and removed.

[0042]The face pattern of a printing picture and the security element formed from the uneven pattern has the field embedded as optical marking provided with the reflecting layer 3 on the rugged structure 6 and the structure 21 scattered about or reflected, and a transparent holdfast in the plastic lamination 1 and 19. A face pattern is surrounded by the holdfast 22 preferably connected by un-dissociating in order to protect the reflecting layer 3 from corrosion or other environmental influence. It is irradiated with a face pattern with the

light source 25, and it is observed by the observer's 26 naked eye. The security element is selectively transparent. That is, in the holdfast 22, it is completely transparent, and the field covered by the reflecting layer 3 which adjoins the holdfast 22 is opaque. It is because direct, it diffracts and incident light reflects by the reflecting layer 3.

[0043]The boom hoisting 27 of the surface of a character and a printing picture, a photograph, or the subject 23 that is generally under a security element is observed by the observer 26 through the transparent holdfast 22. Various surface elements of the face pattern which diffracts, scatters about for it or reflects light can be seen with luminosity sufficient even when lighting is poor. On the other hand in the transparent holdfast 22, a refractive index has change depending on the case, diffraction and reflection occur, even if it sees this by a good view condition, only the effect of a taper can be observed extremely, and discernment of the boom hoisting 27 on the subject 23 is not barred by it.

[0044]The surface elements which act optically are a line, a guilloche pattern, a point, a detailed character, a polygon, etc., for example, and a face pattern is formed from them. The observer of a face pattern can see the picture in which consciousness is possible, i.e., an image with color, according to the direction of a lighting direction and a security element, and this image changes according to it, when a lighting direction and an observation direction change with rotations or rocking of a security element. It is because white incident light is diffracted, reflected or scattered about in the predetermined direction by the field which has the reflecting layer 3. An observer observes the face pattern from which it differs in the boom hoisting 27 other than the boom hoisting 27, and a color, a size, and shape change further according to momentary lighting and observation direction, when a security element is made to rotate or rock.

[0045]

[Effect of the Invention]As explained above, in this invention, an etching agent is applied by printing technique on a reflecting layer by the predetermined printing picture which consists of a partial side. Since it is removed by the etching agent in the place whose reflecting layer is this partial side, the field of the coating layer of the place of a partial side and the reflecting layer which remained is covered with at least one transparent protective layer and a plastic lamination is formed. It becomes possible to manufacture the face pattern selectively metalized by the easy and cheap method.

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CLAIMS

[Claim(s)]

[Claim 1]In a method of manufacturing a transparent security element selectively which embedded a face pattern which consists of optical marking which has the separated reflecting layer (3), and which acts in diffracted-light study, and a transparent holdfast (22), and which can be recognized visually in a plastic lamination (1, 19), Fine rugged structure (6) is microscopically molded by base foil (4), and wholly coating of the coating layer (1) of base foil (4) made unevenness in this way is carried out by a reflecting layer (3), An etching agent (8) is applied on a reflecting layer (3) by printing technique by a predetermined printing picture which consists of a partial side (7), It is removed by etching agent (8) in a place whose reflecting layer (3) is a partial side (7), The surface of a coating layer (1) is exposed, a field of a coating layer (1) which is a partial side (7), and a reflecting layer (3) which remained is covered with at least one transparent protective layer (19), and a plastic lamination (1, 19) is formed, In that case, a method of manufacturing a transparent security element selectively when [of a partial side (7)] a coating layer (1) couples directly with a protective layer (19) by the way, wherein a transparent holdfast (22) is formed.

[Claim 2]In a method of manufacturing a transparent security element selectively which embedded a face pattern which consists of optical marking which has the separated reflecting layer (3), and which acts in diffracted-light study, and a transparent holdfast (22), and which can be recognized visually in a plastic lamination (1, 19), Fine rugged structure (6) is microscopically stamped on base foil (4) covered with a reflecting layer (3), An etching agent (8) is applied on a reflecting layer (3) by printing technique by a predetermined printing picture which consists of a partial side (7), It is removed by etching agent (8) in a place whose reflecting layer (3) is a partial side (7), The surface of a coating layer (1) is exposed, a field of a coating layer (1) which is a partial side (7), and a reflecting layer (3) which remained is covered with at least one transparent protective layer (19), and a plastic lamination (1, 19) is formed, In that case, a method of manufacturing a transparent security element selectively when [of a partial side (7)] a coating layer (1) couples directly with a protective layer (19) by the way, wherein a transparent holdfast (22) is formed.

[Claim 3]at least two rugged structure (6) from which a lattice parameter differs -- a coating layer (1) --
***** -- a method according to claim 1 or 2 characterized by things.

[Claim 4]A method according to claim 3, wherein alignment of the printing picture which consists of a partial side (7) is carried out to a face pattern which consists of optical marking and it is formed.

[Claim 5]A method according to claim 4 in order to protect a reflecting layer (3) from corrosion, wherein a non-dissociating holdfast (22) is formed in the surroundings of a face pattern.

[Claim 6]A method given in any 1 paragraph to claims 1-5, wherein an adhesion medium layer (5) is applied between a coating layer (1) of base foil (4), and support foil (2), transparent foil is used for support foil (2) and optical marking can recognize visually through a protective layer (19) and support foil (2).

[Claim 7]A method given in any 1 paragraph to claims 1-6, wherein material with which a refractive index is [0.1] different from material of a coating layer (1) at the maximum is used for a protective layer (19).

[Claim 8]A method given in any 1 paragraph to claims 1-7, wherein the same material as a coating layer (1) is applied as a protective layer (19).

[Claim 9]A method given in any 1 paragraph to claims 1-8, wherein aluminum is used as a reflecting layer (3) and an alkaline etching agent (8) is used.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a sectional side elevation showing base foil.

[Drawing 2]It is a sectional side elevation showing applying an etching agent on base foil.

[Drawing 3]It is a sectional side elevation showing the base foil after etching.

[Drawing 4]It is a perspective view after etching of the stamped base foil.

[Drawing 5]It is an explanatory view showing the manufacturing process of a plastic lamination.

[Drawing 6]It is a cross-sectional view of a plastic lamination.

[Drawing 7]It is an explanatory view explaining the security element on a document.

[Description of Notations]

1 Coating layer

2 Support foil

3 Reflecting layer

4 Base foil

6 Rugged structure

7 Partial side

8 Etching agent

19 Protective layer

22 Holdfast

23 Subject

[Translation done.]

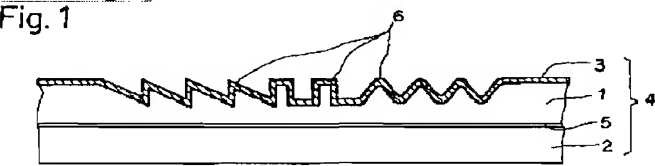
* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

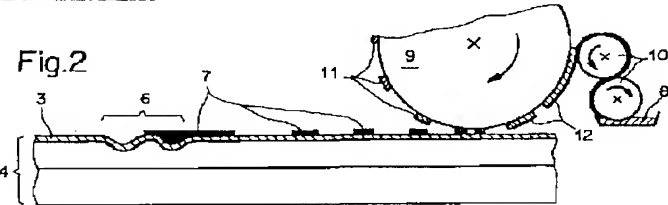
- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DRAWINGS

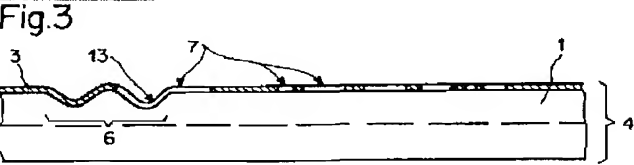
[Drawing 1]



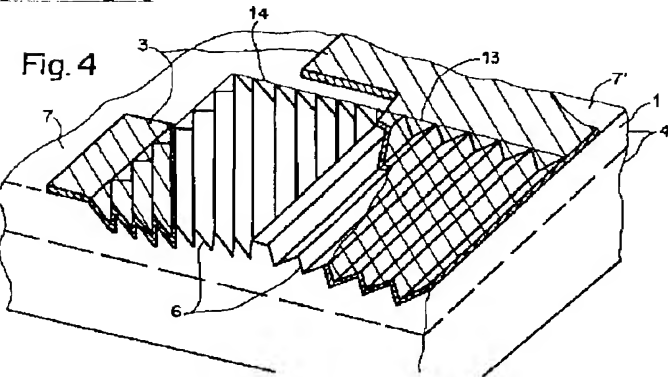
[Drawing 2]



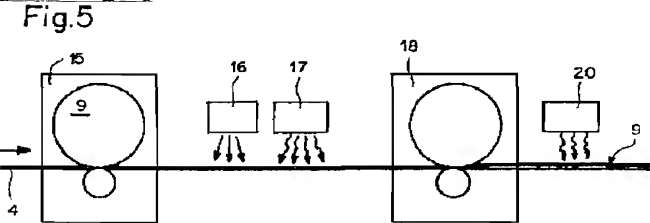
[Drawing 3]



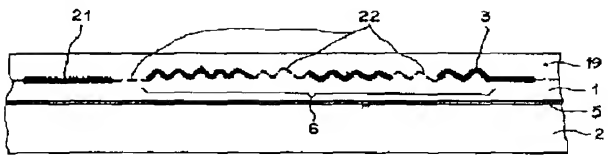
[Drawing 4]



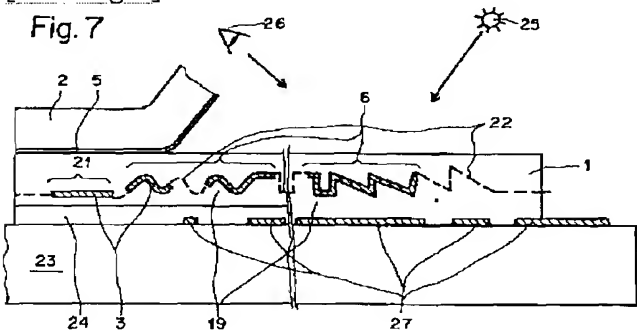
[Drawing 5]



[Drawing 6]
Fig.6



[Drawing 7]
Fig. 7



[Translation done.]